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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
08/799,506	02/12/1997	SHUNPEI YAMAZAKI	0756-1630	3866

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EXAMINER

WILCZEWSKI, MARY A

ART UNIT	PAPER NUMBER
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2822

DATE MAILED: 06/18/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.
08/799,506

Applicant(s)
Yamazaki et al.

Examiner
Mary Wilczewski

Art Unit
2822



-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE three (3) MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on Feb 4, 2002
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 80-82, 84-88, 92-94, 98-100, 105, 108-110, 114, 115, 118-120, ^{132 - 153} is/are pending in the application.
- 4a) Of the above, claim(s) 84 and 85 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed. ^{132 - 153}
- 6) ☒ Claim(s) 80-82, 86-88, 92-94, 98-100, 105, 108-110, 114, 115, 118-120, and is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☒ Certified copies of the priority documents have been received in Application No. 08/330,797.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

*See the attached detailed Office action for a list of the certified copies not received.

- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s). 39 6) ☐ Other: _____

Art Unit: 2822

DETAILED ACTION

This Office action is in response to the amendment filed on February 4, 2002.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 80- 82, 86-88, 104, 105, 108, 109, and 132-153 are rejected under 35

U.S.C. 103(a) as being unpatentable over Zhang et al., U. S. Patent 5,352,291, of record, either taken alone or in combination with Satoshi, JP 4-152624, cited by Applicants in the IDS filed on January 26, 2001.

Zhang et al. disclose a multi-chambered apparatus comprising a laser irradiation chamber, means for introducing a gas into the laser irradiation chamber, a film deposition chamber, and a chamber capable of taking the substrate out of the apparatus, see figure 2 and columns 6-7.

It has been well established that the intended use of an apparatus is not germane to determining the patentability of the apparatus, *In re Finsterwalder*, 168 USPQ 530 (CCPA 1971). It has also been established that the purpose to which an apparatus is to be put and any expression relating the apparatus to the contents thereof during the intended operation of the apparatus are not significant in determining the patentability of an apparatus claim, *Ex parte Thibault*, 164 USPQ

Art Unit: 2822

666 (PTO Board of Appeals 1969). Furthermore, a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the structural limitations of that claimed, *Ex parte Masham*, 2 USPQ2d 1647 (PTO Board of Appeals 1987). Therefore, the presently claimed apparatus is not deemed patentably distinct from the known apparatus of Zhang even though Zhang does not teach the introduction of an oxidizing gas into the laser irradiation chamber.

Although Zhang et al. disclose that substrate is irradiated in the laser irradiation chamber with a laser in vacuum or in an inactive atmosphere and that the laser irradiation chamber can have a gas supply system (col.6, lines 17-20), Zhang et al. fail to teach to crystallize the amorphous silicon film in an oxidizing atmosphere. However, it is well known in the art to crystallize amorphous silicon films in an oxidizing atmosphere in order to enable a polycrystalline silicon film to be grown having large crystal grains and to enable the formation of a clean Si/SiO₂ interface, see the abstract of Satoshi. Therefore, in light of the teaching of Satoshi it would have been obvious to one skilled in the art to crystallize the amorphous silicon film in the known apparatus of Zhang et al. in an oxidizing atmosphere.

Claim 110 is rejected under 35 U.S.C. 103(a) as being unpatentable over Zhang et al., U. S. Patent 5,352,291, as applied to claims 86 and 89, respectively, above, and further in view of Begin et al., U. S. Patent 5,310,410.

Art Unit: 2822

Claims 92-94, 98-100, 114, 115, and 118-120 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhang et al., U. S. Patent 5,352,291, further in view of Begin et al., U. S. Patent 5,310,410.

Zhang et al. disclose a multi-chambered processing apparatus, as illustrated in Figure 2, in which a light irradiation chamber, heat treatment chamber and a deposition chamber are arranged in series. The apparatus also includes a chamber for discharging substrates and a transportation system for transferring substrates from one chamber to another, see columns 6-7. Zhang et al. lack anticipation only of arranging the processing chambers in a cluster and having one chamber for putting the substrate into the multi-chambered apparatus and for taking the substrate out of the apparatus and of transporting the substrate from one chamber to another using a robot arm.

Begin et al. discloses a multi-chambered apparatus in which loading chamber 26 is used to load substrates into the apparatus and transfer processed substrates out of the apparatus and in which a robotic arm is used to transport the substrate from one processing chamber to another, see figures 1 and 2 and column 5, lines 9-16. It would have been obvious to the skilled artisan in light of the teachings of Begin et al. that the various processing chambers of the multi-chambered apparatus of Zhang et al. could be arranged in a cluster using one chamber for loading and unloading substrates into and out of the apparatus and having a robotic arm located in a central chamber for transporting the substrate from one processing chamber to another, since this is a well known arrangement for multi-chambered apparatuses and eliminates the need for two separate chambers for loading and unloading the substrates.

Art Unit: 2822

Claims 82, 85, and 88 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhang et al., U. S. Patent 5,352,291.

Zhang et al. is applied as supra. Although Zhang et al. do not expressly teach use of the disclosed apparatus to form a silicon oxide film, Zhang et al. do disclose that the apparatus can be used to deposit an insulating film, see column 7, lines 10-18. It would have been obvious to the skilled artisan that the apparatus of Zhang et al. could have been used to form a silicon oxide film because a silicon oxide film is an insulating film.

Response to Arguments

Applicant's arguments filed February 4, 2002, have been fully considered but they are not persuasive.

Independent claims 80, 86, 92, and 98 have been amended to recite that the claimed apparatus further comprises a means for introducing an oxidizing atmosphere into the first chamber. It has been well established that the manner in which an apparatus is operated does not differentiate the claimed apparatus from that of the prior art. The purpose to which an apparatus is to be put and expressions relating an apparatus to the contents thereof during the intended operation are not significant in determining patentability of an apparatus claim. *Ex parte Thibault* 164 USPQ 666 (PTO Board of Appeals 1969). Apparatus claims must be structurally distinguishable from the apparatus of the prior art. In the present claims the recitation of a means

Art Unit: 2822

for introducing an oxidizing atmosphere into the first chamber does not distinguish the claimed apparatus from that of Zhang et al. in terms of structure but rather in terms of function. Zhang clearly teaches in column 6, lines 17-20, that a gas supply system can be established to each of the chambers 1 to 5 in order to introduce an active or inactive gas. Claims containing a recitation with respect to the manner in which a claimed apparatus is intended to be employed do not differentiate the claimed apparatus from a prior art apparatus if the prior art apparatus teaches all the structural limitations of the claim. Zhang et al. clearly teach all the structural limitations of the claims albeit Zhang does not teach the use of an oxidizing atmosphere. However, the claims have been rejected over Zhang et al. in view of Satoshi in order to show that the presence of an oxidizing atmosphere during crystallization of a silicon film would have been obvious to one skilled in the art, since it is known that crystallization of silicon films in an oxidizing atmosphere enables the growth of polysilicon films having large grain sizes.

Applicant has argued that the teachings of Zhang are not amenable to modification since Zhang discloses the undesirability of an oxidizing atmosphere. The test for combining references is what the combination of the disclosures, as a whole, would suggest to one of ordinary skill the art. In *re Rosselet* 146 USPQ 183; In *re McLaughlin* 170 USPQ 209. The prior art clearly teaches that amorphous silicon films can be crystallized in either oxidizing or non-oxidizing atmospheres, and that both methods yield polysilicon films having large crystal grains. Although Zhang chooses to perform his crystallization step in vacuum or in an inactive gas atmosphere, given the teaching of Satoshi, it would have been obvious that the crystallization step could have

Art Unit: 2822

will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to M. Wilczewski whose telephone number is (703) 308-2771.

A handwritten signature in black ink, appearing to be 'M. Wilczewski', with a stylized, flowing script.

M. Wilczewski
Primary Examiner
Tech Center 2800

MW
June 17, 2002



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